

1307078

DRAWINGS ATTACHED

- (21) Application No. 17033/70 (22) Filed 10 April 1970
 (23) Complete Specification filed 27 April 1971
 (44) Complete Specification published 14 Feb. 1973
 (51) International Classification F16P 3/04
 (52) Index at acceptance F2J 2D
 (72) Inventor GEOFFREY WILLIAM SMITH



(54) IMPROVEMENTS RELATING TO GUARDS FOR UP-STROKING PRESSES

(71) We, PRICE MACHINE GUARDS LIMITED, of Powke Lane, Cradley Heath, Warley, in the County of Worcester, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to guards for presses, for example press brakes, of the kind having an up-stroking ram.

In accordance with the invention, an up-stroking press is provided with a guard comprising a number of photo-electric cells and a number of light beams, arranged so that if the beams are interrupted operation of the press is stopped, characterised in that the cells and beam emitters are mounted on the press for movement with the up-stroking ram of the press.

Hence, the space above the bottom ram, clear of the workpiece and any gauges therefor is guarded by the light beams, and continues to be so guarded at all times during the press operation.

Preferably a plurality of light beams are located in parallel to form a vertical light curtain (although the beams individually extend horizontally) and an equal number of cells are provided, the arrangement being that if any one of the beams is interrupted the press is stopped.

The beam emitters and the cells may be adjustable via clamps, on carrier rods, to suit requirements. Where the workpiece is upwardly deflected during the press operation, the arrangement may be such that the guard is switched off or rendered ineffective at such point or points in the operation, and this may be done by providing the cells with a switch and locating a cam for movement with the bottom ram, to switch the cells off and render the guard ineffective as the ram stroke proceeds.

One embodiment of the invention is now described with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view of a press brake;

Figure 2 is an enlarged, fragmentary, sectional elevation.

The press brake shown comprises an upper and fixed forming tool 10 and a lower and movable tool 12 carried on a beam 14 which moves vertically, or "upstroke" in operation.

The beam carries a pair of housings 16, 18, one of which carries the light sources 20 and the other aligned photo-cells. The housings are adjustable in various directions by means of the slotted brackets 24 interposed between the housings and the beam.

The beam may also co-operate with micro switches 30 so that in the fully open position of the tool, the guard afforded by the "light curtain" is ineffective, and as the beam rises, the curtain becomes part and then fully operable, that is, interruption of any beam has no effect when the tools are wide open, interruption of some beams has no effect when the beam starts to rise, and interruption of any beam stops the press beyond a certain point in its travel.

WHAT WE CLAIM IS:—

1. An up-stroking press provided with a guard comprising a number of photo-electric cells and a number of light beams, arranged so that if the beams are interrupted operation of the press is stopped, characterised in that the cells and beam emitters are mounted on the press for movement with the up-stroking ram of the press.

2. A brake as claimed in Claim 1, wherein a plurality of light beams are arranged to extend horizontally but form a vertical curtain.

3. A press brake substantially as herein described with reference to the accompanying drawings.

For the Applicants,
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Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1973.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.

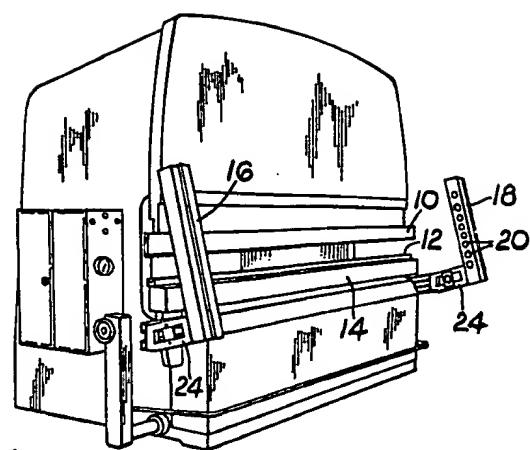


Fig. 1.

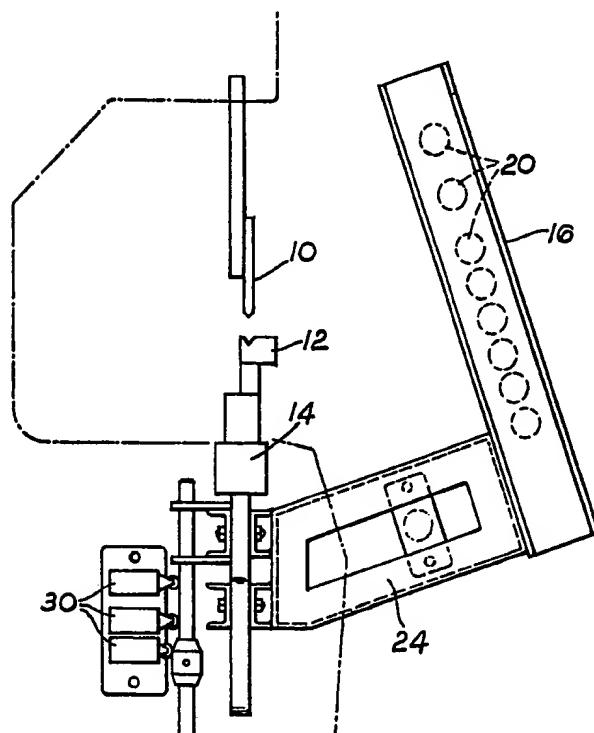


Fig. 2.

Memorandum

To: Harold H. Fullmer

From: David M. De Santo

Re: WATE-0011-Information Disclosure Statement

Date: February 6, 2002

Please review the attached list of references which were cited in the specification of the above-identified case. As well as references cited in the ISR dated 06/21/00. Let me know which references you would like included with the IDS. Also, let me know if you are aware of any additional art that should be included with the Information Disclosure Statement. Return this list to me for further preparation of the IDS, and ordering of documents. The due date is **May 4, 2002**.

If you have any questions, please feel free to contact me at ext. 5987.

Thank you.

Dave

WATE-0011
Publications/References

Publications/References Found in the Specification:::

GB 1307078 ✓

AU 667057 ✓

PCT/AU97/00005 ✓ WO 97/25568 7/17/97

References From The International Search Report Dated 06/21/00

4,127,771 US

FR 2540224 A

EP 789182 A